GENERIC NAME: **EPINEPHRINE HCl**

112.12

CLASS: sympathomimetic

Mechanism of Action:

Pharmacological Effects: Direct acting a and ß agonist; a-bronchial, cutaneous, renal, and visceral arterial constriction (increased systemic vascular resistance); $ß_1$-positive inotropic and chronotropic actions (increases myocardial workload and oxygen requirements), increases automaticity and irritability; $ß_2$ bronchial smooth muscle relaxation and dilation of skeletal vasculature. Other**:** blocks histamine release
Clinical Effects: Cardiac Arrest-increases cerebral and myocardial perfusion pressure; increases systolic and diastolic blood pressures; increases electrical activity in the myocardium; can stimulate spontaneous contractions in asystole. Bradycardia-increases heart rate, increases BP; Bronchospasm/Anaphylaxis-reverse signs/symptoms

Indications and Field Use:

Cardiac arrest - VF/Pulseless VT; asystole; PEA (First line pharmacologic agent for any pulseless dysrhythmia in cardiopulmonary arrest).
Severe bronchospasm, i.e., bronchiolitis, asthma.
Anaphylaxis.
Bradycardia, refractory with profound hypotension, monitored patient only.
Hypotension unresponsive to other therapy, monitored patient only.
Croup

Contraindications:

None known for cardiac arrest
Hypothermia, relative contraindication

Adverse Reactions:

CV: Hypertension, ventricular dysrhythmias; tachycardia; angina
CNS: Anxiety, agitation
GI: Nausea/vomiting

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

Potentiates other sympathomimetics.
Reacts with alkaline solutions, such as sodium bicarbonate, should not be mixed with alkaline agents.

Adult Dosage:

Pulseless Arrest –
IV/IO: 1 mg of 1:10,000 solution repeat every 3 - 5 minutes or,
ET: Give 2 - 2.5 mg via the ET tube.
May use 1:10,000 or dilute 1:1000 to equal 10 mL via ET tube for adult. (i.e., 2 mg of 1:1,000 epinephrine diluted with 8 mL NS in a 10 mL syringe)

Continuous Infusion for Hypotension or Symptomatic Bradycardia: 1 mg added to 500 mL of NS administered at 1 mcg/min titrated to desired hemodynamic response (range 2-10 mcg/min); not first-line therapy.

Anaphylaxis and asthma: Give 0.3 - 0.5 mg of 1:1,000 solution IM (preferred), SC, or inject SL, may repeat every 15 to 20 minutes; or in extreme cases only, may be asked to use 1:10,000 solution and give 0.1 mg every 5 minutes IV/IO or continuous IV/IO infusion of 1 - 4 mcg/min to prevent need for multiple injections.

Pediatric Dosage:

Pulseless Arrest or Refractory Bradycardia:
IV/IO: 0.01 mg/kg of 1:10,000 repeat every 3 - 5 minutes, maximum single dose 1 mg.
ET: 0.1 mg/kg of 1:1,000; diluted with NS to a volume of 3 - 5 mL prior to instillation or followed with flush of 3 - 5 mL of NS after instillation repeat every 3 - 5 minutes, maximum single dose 10 mg.
Asthma/anaphylaxis: Use 1:1,000 solution; give 0.01 mg/kg IM (preferred), SC (maximum single dose of 0.5 mg/dose).
IV Infusion: 0.1 – 1 mcg/kg/min; to prepare for small children 0. 6 x body wt. in kg = mg added to NS to make 100 mL. With this mixture, 1 mL/hr delivers 0.1 mcg/kg/min.
Croup: 3 mg 1:1,000 mixed in 3 mL NS via SVN.

Neonatal Dose for First 12 hours of life:

IV/IO Initial and Repeat Dose for Cardiac Arrest or Refractory Bradycardia: 0.01-0.03 mg/kg of 1:10,000 every 3-5 minutes
ET: 0.1 mg/kg of 1:10,000 every 3 – 5 minutes if neonate has no vascular access, fails to respond to positive pressure ventilation with 100% O_2.

Routes of Administration:

Cardiac: IV push, IV infusion, ET, or IO
Asthma/anaphylaxis/bronchiolitis: IM, SC, SL injection, IV, ET, IO
Infusion pump required for IV infusions in interfacility transfers

Onset of Action:

Seconds

Peak Effects:

Minutes

Duration of Action:

Several minutes

Dosage Forms/Packaging:

1:10,000 solution 1 mg/10 ml prefilled syringes
1:1,000 solution 1 mg/1 ml ampule or prefilled syringes; 30 mg/30 ml vial

Arizona Drug Box Minimum Supply:

PARAMEDIC and IEMT/99:	1:10,000 prefilled syringes – 5 mg
	1:1,000 - 2 mg
	1:1,000 multidose vial- 30 mg
INTERMEDIATE	1:1,000 - 2 mg

Special Notes:

> Total dose for an adult ET (drug plus diluting solution) should equal at least 10 ml to ensure that the drug reaches lung tissue rather than remaining in the tube. Pediatric patient should equal 3 - 5 ml.
> Multi-dose Vial: 1 mg/ml (1:1,000) in 30 ml bottle. May be used for administering the ACLS doses of epinephrine down the endotracheal tube (2-2.5 times the peripheral route dose, diluted with 8 ml NS to make a 1:10,000 solution) or for mixing an epinephrine infusions such as 1 mg in 500 mL NS
> Infusions: An infusion pump is required for interfacility transports. A minimum of microdrip tubing is required for field use.